

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
	)	
Inquiry Concerning the Deployment	)	
of Advanced Telecommunications Capability	)	
to All Americans in a Reasonable and	)	
Timely Fashion, and Possible Steps	)	GN Docket No. 16-245
to Accelerate Such Deployment Pursuant to	)	
Section 706 of the Telecommunications Act of	)	
1996, as Amended by the Broadband Data	)	
Improvement Act Protecting the Privacy	)	
of Customers of Broadband and Other	)	
Telecommunications Services	)	

**Comments of  
Will Rinehart<sup>1</sup>**

**Introduction**

Section 706 of the Telecommunications Act of 1996 granted the Federal Communications Commission (FCC) the ability to “encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans” and directed the agency to conduct an annual inquiry to support this effort. However, in recent years, it has become a tool not of a deregulatory agenda but a pro-regulatory one. In these comments, I recommend that the FCC:

1. Recommit to the original purpose of section 706, namely to remove barriers to investment;
2. Drop the search for “innovative ideas” to increase broadband deployment;
3. Conduct evaluations of the current broadband deployment programs;
4. Lower the current speed threshold to an economically supported competitive level of broadband service;
5. Realize the limits of using quality of service (QoS) metrics for determining deployment; and
6. Recognize that in the real world, tradeoffs exist and regulations could subtly change the investment decisions to the detriment of consumers.

**A Question of Authority**

The tools the Commission could use to carry out Section 706 include “price cap regulation, regulatory forbearance, measures that promote competition in the local telecommunications

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market, or other regulating methods that remove barriers to infrastructure investment.” Much like the rest of the Act, this section was intended to be deregulatory in nature.<sup>2</sup>

However, that deregulatory authority has been contorted and used as a pro-regulatory measure to undergird both the Open Internet Order and the recently vacated order meant to preempt state rules on municipal broadband. In the recent past, the Commission agreed that Section 706 “does not constitute an independent grant of authority” and instead “directs the Commission to use the authority granted in other provisions . . . to encourage the deployment of advanced services.”<sup>3</sup> The Commission should recommit their efforts to this purpose, since it was the intended reason for this section of the Act.

Why is this inquiry important? In the past, this Notice has called for “innovative ideas” to increase broadband deployment. At first glance, the language seems innocuous.<sup>4</sup> However, the Chairman has said he wants to expand FCC power, and just two years ago, the courts gave the Commission new power to do that.<sup>5</sup> The court decision gave the FCC power far beyond what Congress intended.<sup>6</sup> The state of competition matter for mergers, as well. As I have outlined previously, the FCC has historically employed an *ad hoc* and unjustified market analysis when looking at mergers, which is further complicated with the quickly expanding threshold in broadband speeds.<sup>7</sup> Sinking mergers could be seriously harmful to consumers in the long run.

The FCC holds all of the keys. It determines the level at which a network needs to deploy in a timely manner and has the ability to impose regulations as a result of this finding.

In the 2016 report from earlier this year, the Commission concluded that “advanced telecommunications capability is not being deployed to all Americans in a reasonable and timely fashion” and cited a number of programs that have all been designed to narrow the divide.<sup>8</sup> But as Commissioner Pai adroitly pointed out, many of these programs haven’t worked and the costs are staggering. The \$28 billion spent on the FCC’s high cost program, as well as the \$9.4 billion in commitments through the Connect America Fund and the \$350 million through the Mobility Fund to deploy services, just to name a few, have all failed to accomplish their goals if the 2016 report is correct. As he notes,

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<sup>2</sup> Seth L. Cooper, *Section 706’s Deregulatory Directive: Accelerate Broadband by Removing Regulatory Barriers*, [http://www.freestatefoundation.org/images/Section\\_706\\_s\\_Deregulatory\\_Directive\\_-\\_Accelerate\\_Broadband\\_by\\_Removing\\_Regulatory\\_Barriers\\_082813.pdf](http://www.freestatefoundation.org/images/Section_706_s_Deregulatory_Directive_-_Accelerate_Broadband_by_Removing_Regulatory_Barriers_082813.pdf).

<sup>3</sup> Federal Communications Commission, *In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability*, [https://transition.fcc.gov/Bureaus/Common\\_Carrier/Orders/1998/fcc98188.pdf](https://transition.fcc.gov/Bureaus/Common_Carrier/Orders/1998/fcc98188.pdf).

<sup>4</sup> Federal Communications Commission, *Tenth Broadband Notice of Inquiry*, [http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2014/db0805/FCC-14-113A1.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0805/FCC-14-113A1.pdf).

<sup>5</sup> Tom Wheeler, *The Facts and Future of Broadband Competition*, [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-329161A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-329161A1.pdf).

<sup>6</sup> Will Rinehart, *Network Neutrality Decision a Mixed Bag for Consumers*, <https://www.americanactionforum.org/insight/network-neutrality-decision-a-mixed-bag-for-consumers/>.

<sup>7</sup> Will Rinehart, *A Look Inside the Complicated FCC Transaction Review Process*, <https://www.americanactionforum.org/insight/a-look-inside-the-complicated-fcc-transaction-review-process/>.

<sup>8</sup> Federal Communications Commission, *2016 Broadband Progress Report*, [https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-16-6A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A1.pdf).

“I agree that it’s a failure that the FCC has spent \$14.6 billion on the E-Rate program, yet it still finds that 91% of schools don’t meet our own long-run connectivity target and 41% of schools don’t even meet the short-term goal.”<sup>9</sup>

Following the Government Accountability Office, I have urged the Commission to conduct much needed evaluations for these programs.<sup>10</sup> What the continuing record reveals is an agency that is far more concerned with its own agenda, rather than following what is clearly laid out in the statute.

### **The Need for Speed, and for its Definition**

Both in the 2016 Broadband Report and this Notice, the Commission outlines a speed threshold of 25 Mbps download and 3 Mbps upload as a benchmark for advanced services in the commercial sector. For the Commission’s own programs, however, 10 Mbps stands as the demarcation between the two.<sup>11</sup> The disparity between the standards set by the Commission for itself and for others is concerning, in part because it shows a disorganization within the agency and an underdevelopment of standards that could be used to understand the quality of service of broadband. While the FCC does have an expert staff on radio matters, the expertise in Internet networks seems to be underdeveloped. The Commission should remedy this deficit.

Indeed, the 706 inquiries have long focused on speeds, which are relatively easy to test, although the enabling statute mandates that the FCC encourages deployment of “advanced telecommunications capability to all Americans.” Bandwidth isn’t a perfect proxy for deployment, as the FCC has recognized in this recent Notice. Moreover, the capability of broadband isn’t the same as the adoption of it. As Pew surveys have uncovered,<sup>12</sup> home broadband deployment declined in 2015, even as prices flatlined<sup>13</sup> and speeds increased.<sup>14</sup> During that same time period, mobile broadband use increased, such that little change occurred in the number of individuals having advanced Internet access.<sup>15</sup> Echoing the global market, broadband adoption is plateauing in the United States, and those that are currently not online will be exceptionally difficult and expensive to reach in the coming years.<sup>16</sup> Focusing on speed, and not on the broader issue of deploying the capability of broadband shifts attention away from the maturing of the market, away from the law, and away from real reforms in the FCC’s own programs.

Moreover, speeds vary from region to region. When states are considered individually, Delaware, Massachusetts, Virginia and the District of Columbia all rank within the top ten of all Internet

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<sup>9</sup> *Ibid.*

<sup>10</sup> Will Rinehart, *Five Reforms to Modernize the Lifeline Subsidy Program*, <https://www.americanactionforum.org/research/five-reforms-to-modernize-the-lifeline-subsidy-program/>.

<sup>11</sup> Will Rinehart, *Tenth Broadband Progress Notice of Inquiry*, [http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2014/db0805/FCC-14-113A1.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0805/FCC-14-113A1.pdf).

<sup>12</sup> John B. Horrigan & Maeve Duggan, *Home Broadband 2015*, <http://www.pewinternet.org/2015/12/21/home-broadband-2015/>.

<sup>13</sup> Bureau of Labor Statistics, Consumer Price Index Detailed Report, <http://www.bls.gov/cpi/cpid1606.pdf>

<sup>14</sup> Akamai, *State of the Internet Q1 2016 Report*, <https://www.akamai.com/uk/en/multimedia/documents/state-of-the-internet/akamai-state-of-the-internet-report-q1-2016.pdf>.

<sup>15</sup> John B. Horrigan & Maeve Duggan, *Home Broadband 2015*, <http://www.pewinternet.org/2015/12/21/home-broadband-2015/>.

<sup>16</sup> Mary Meeker, *Internet Trends 2016 – Code Conference*, <http://www.kpcb.com/blog/2016-internet-trends-report>.

speeds, faster than Japan, Taiwan and Romania. See the chart below.<sup>17</sup> Federal policy made without concern for the regional variations denies that more tailored approaches to deployment might be needed.

**Table 1: Ten Fastest Broadband Regions When Considering US by State**

Country/Region	Q1 2016 Peak Mbps	QoQ Change	YoY Change
Singapore	146.9	8.30%	49%
Hong Kong	110.3	4.90%	19%
Indonesia	110.2	38%	535%
South Korea	103.6	8.70%	32%
DC	93	13%	22%
Delaware	92.2	4.40%	15%
Qatar	89.2	15%	27%
Massachusetts	86.8	6.80%	23%
Macao	85.9	3.30%	48%
Virginia	84.9	9.60%	7.70%

By focusing on peak data transfer rates, the FCC further encourages both network owners and ISPs to optimize for that purpose. Networks have tradeoffs, which these standards could affect on the margins. As network engineer Martin Geddes explained,

“We have seen much concern and engineering effort expended over the phenomenon called ‘bufferbloat’. This is when we have large buffers that create spikes of delay as queues build up. As ISPs have tuned their services to meet their marketing promises for speed, they have taken their eye off other matters (i.e. packet scheduling) that are of equal or more importance to the overall user experience.”<sup>18</sup>

As he pointed out elsewhere, there is a relationship between ISP speed testing within a network and capital spending that seems to occur only for those regions that are tested.<sup>19</sup> The recent adoption by the FCC of higher speed standards could change the capital decision making process within firms.

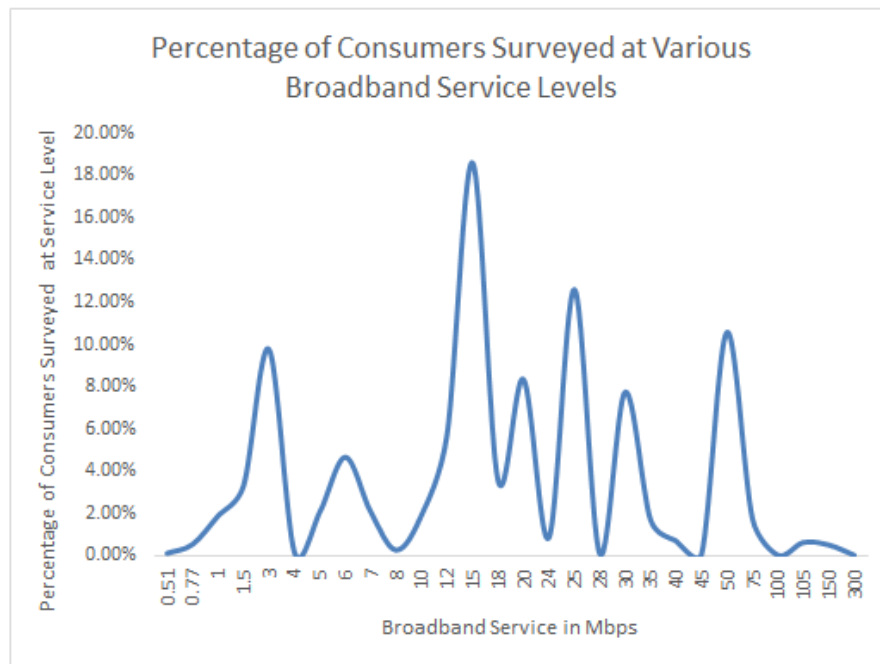
<sup>17</sup> Akamai, *State of the Internet Q1 2016 Report*, <https://www.akamai.com/uk/en/multimedia/documents/state-of-the-internet/akamai-state-of-the-internet-report-q1-2016.pdf>.

<sup>18</sup> Martin Geddes, *Why Broadband Speed Tests Suck*, <http://www.martingeddes.com/why-broadband-speed-tests-suck/>.

<sup>19</sup> *Ibid.*

Before the 25 threshold was set in 2015, the FCC had changed the standard in 2012. During that time, the actual broadband market saw a robust increase in average speeds of nearly 80 percent. Few other technologies can claim this sort of real world advancements in just a short time. However, the change the FCC undertook represented a 525 percent increase in those same 3 years. Clearly, this move is divorced from market realities.

The 2015 Measuring Broadband America Fixed Broadband Report confirms the distance between the Commission and the market. As the chart below shows, the single greatest percentage of individuals has a connection speed at the 15 Mbps level.



Moreover, the FCC's own analysis has supported a 10 Mbps standard in the recent past:

"However, the performance increase diminishes beyond about 10 Mbps, as latency and other factors begin to dominate. For these high speed tiers, consumers are unlikely to experience much if any improvement in basic web browsing from increased speed—i.e., moving from a 10 Mbps broadband offering to a 25 Mbps offering."<sup>20</sup>

As networking pioneer Richard Bennett has explained, at a network speed of 10 Mbps all but the most strenuous applications (such as video conferencing which requires 15 Mbps) can be run with no negative impacts on the quality of experience.

What cannot be gleaned from the record is the elasticity of demand both above and below 25 Mbps. Indeed, little is known about the marketplace at the current 25 Mbps level, especially the economic indicators that would support an agency action here.

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<sup>20</sup> Federal Communications Commission, *2014 Measuring Broadband America Fixed Broadband Report*, <http://data.fcc.gov/download/measuring-broadband-america/2014/2014-Fixed-Measuring-Broadband-America-Report.pdf>.

## Quality of Service

Although many consumers enjoy the Internet without speed concerns, it is the case that some applications are uniquely sensitive to specific network performance features. However, in seeking “comment on how consistency of service impacts access to advanced telecommunications capability over fixed broadband networks,” the Commission engaged in a technical fishing expedition that will face three broad hurdles. For one, making technical characteristics a goal will contort the choices of network operators and ISPs. Second, and more importantly, the relationship between QoS and the quality of the experience for consumers is tenuous at best. Lastly, the regulatory regime set up by the Open Internet Order could conflict with any mandates of QoS.

Under today’s technology, consumers clearly benefit from data differentiation. The Voice over Internet Protocol (VOIP), live video streaming, videoconferencing, and a number of other applications are sensitive to performance characteristics. These applications can only exist because of data differentiation. Differentiation is not only helpful, it is fundamental. As the Broadband Internet Technical Advisory Group noted in one of their reports, the ability to treat traffic differentially was built into the Internet protocols, even at the beginning.<sup>21</sup> As the report continues, traffic management can contribute to both the “efficiency of a network and to the predictability of the manner in which network resources are shared.”<sup>22</sup>

The FCC seeks to create a blueprint for Internet service characteristics going forward. By defining the elements that network operators and ISPs should maintain, the agency will be architecting those networks. The problem is a variant of Goodhart’s law, namely that “when a measure becomes a target, it ceases to be a good measure.” The measure that is targeted will be sought to gain more favorable assessments. Rather than serving as an objective indicator of Internet infrastructure, the metric will become the goal of network operators and ISPs. In the real world, where tradeoffs exist, the FCC’s actions could subtly change the investment decisions to the detriment of consumers.

Incentivizing networks operators and ISPs to chase these metrics would be desirable if the metric resulted in consumer benefit. The tension comes from the connection between the metrics and the service as experienced by consumers. While measuring those metrics is relatively easy, establishing a relationship between them and the customer experience isn’t easy. The customer experience isn’t a simple linear relationship, as many will access the Internet via a WiFi enabled hotspot, adding another failure point. As one highly regarded report on this problem notes,

“... it was not then possible to find any correlations in the experimental data that were acceptable. Correlations were unsuccessfully investigated between the [mean opinion score, a subjective measure of user experience] and different [QoS] statistics describing the frame rate, retry rate, retry ratio and bytes/second.”<sup>23</sup>

Speaking on this problem, Professor J. Pierre de Vries noted that “Just because everyone thinks something is true doesn’t make it so.” The FCC cannot simply accept anecdotal evidence on issue, but needs to be supported by consistent analysis that connect specific metrics to specific consumer

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<sup>21</sup> Broadband Internet Technical Advisory Group, *Differentiated Treatment of Internet Traffic*, [https://www.bitag.org/documents/BITAG - Differentiated Treatment of Internet Traffic.pdf](https://www.bitag.org/documents/BITAG_-_Differentiated_Treatment_of_Internet_Traffic.pdf).

<sup>22</sup> *Ibid.*

<sup>23</sup> Mass Consultants Limited, *Estimating the Utilisation of Key License-Exempt Spectrum Bands*, <http://stakeholders.ofcom.org.uk/binaries/research/technology-research/wfiutilisation.pdf>.

experiences, as experienced in the real world. In other words, nothing less than a quality based elasticity of demand will suffice for this inquiry.<sup>24</sup>

Lastly, this inquiry is at odds with the goals of the Open Internet Order. As Chairman Wheeler made abundantly clear, the new rules weren't meant to regulate "applications or services or how the Internet operates, its routing or its addressing," and would allow "innovators [to] develop products and services without asking for permission."<sup>25</sup>

## Conclusion

According to the FCC's own findings, they are not doing well in broadband deployment. Yet, the Commission could do much better if it were to

1. Recommit to the original purpose of this section, namely to remove barriers to investment;
2. Drop the search for "innovative ideas" to increase broadband deployment;
3. Conduct evaluations of the current broadband deployment programs;
4. Lower the current speed threshold to an economically supported competitive level of broadband service;
5. Realize the limits of using quality of service (QoS) metrics for determining deployment; and
6. Recognize that in the real world, tradeoffs exist and regulatory could subtly change the investment decisions to the detriment of consumers.

The FCC should treat this proceeding as an annual status report, not as a fishing expedition to regulate. When the focus instead changes to making real progress, consumers will win.

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<sup>24</sup> W. Whitney Hicks & S. R. Johnson, *Quantity and Quality Components for Income Elasticity of Demand for Food*, [https://www.jstor.org/stable/1237349?seq=1#page\\_scan\\_tab\\_contents](https://www.jstor.org/stable/1237349?seq=1#page_scan_tab_contents).

<sup>25</sup> Office of Chairman Wheeler, *The Open Internet Order: Preserving and Protecting the Internet for All Americans*, [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-332486A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-332486A1.pdf).